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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,136	12/03/2003	Marco Ranalli	60130-1978	5317
26096	7590	02/18/2005	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			NGUYEN, TU MINH	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/727,136	RANALLI ET AL.	
	Examiner	Art Unit	
	Tu M. Nguyen	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on 17 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10, 13 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 7, 11, 12 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. An Applicant's Amendment filed on March 17, 2004 has been entered. Claims 1-19 have been amended; and claim 20 has been added. Overall, claims 1-20 are pending in this application.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, because the claim recites the limitation "the cross-sectional restriction". There is insufficient antecedent basis for this limitation in the claim.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 4, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (U.S. Patent 6,260,353).

Re claim 1, as shown in Figure 1, Takahashi discloses a diesel propulsion engine having an exhaust system is equipped with a discontinuously regenerating exhaust gas purification system including a catalytic converter unit (28), comprising:

- a fuel evaporator unit (44) connected upstream from the catalytic converter unit including an electrical heating element, wherein the fuel evaporator unit is connected to the vehicle fuel tank (18) by a fuel line (42) and installed with spatial separation from an exhaust gas carrying component (26); and

- a fuel vapor (32) feeding channel upstream of the catalytic converter unit, wherein the fuel vapor feeding channel discharges into the exhaust gas carrying component, and extends between the fuel evaporator unit (44) and the exhaust gas carrying component (26).

With regard to the preamble directed to a catalytic converter unit “that burns diesel fuel catalytically”, a preamble to a claim is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self contained description of the structure not depending for completeness upon the introductory clause. See *Kropa v. Robie, supra at 480*. See also *Ex parte Mott*, 190 USPQ 311, 313 (PTO Bd. of App. 1975). Clearly, the pending claim 1 does not rely on the preamble for completeness.

Re claim 4, in the engine of Takahashi, the fuel vapor feeding channel discharges into a cross-sectional restriction of the exhaust gas carrying component.

Re claim 13, in the engine of Takahashi, the fuel evaporator unit comprises a pressure vessel having a heating device, and two valves (20, 34) control flow through the fuel evaporator unit.

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2, 3, and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi as applied to claim 1 above, in view of Kupe et al. (U.S. Patent 6,832,473).

Re claim 2, the engine of Takahashi discloses the invention as cited above, however, fails to disclose that the system further comprises a discontinuously regenerating particulate filter and an oxidizing converter unit connected upstream of the particulate filter.

As illustrated in Figure 1, Kupe et al. teach an exhaust gas purification system comprising a discontinuously regenerating particulate filter (36) and an oxidizing converter unit (34) connected upstream of the particulate filter, wherein the oxidizing converter unit heats up the exhaust gases flowing toward the particulate filter through catalytic combustion of a reductant. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the exhaust gas purification system taught by Kupe et al. in the engine of Takahashi, since the use thereof would have provided an effective means to remove harmful particulate matter from the exhaust gas.

Re claim 3, in the modified engine of Takahashi, the exhaust gas purification system further includes a discontinuously regenerating NOx accumulating converter ((32) in Kupe et al.).

Re claims 16-17, in the modified engine of Takahashi, the oxidizing converter unit and the particulate filter are installed in separate housings or are installed in a common housing (see Kupe et al.).

Re claim 18, in the modified engine of Takahashi, the oxidizing converter unit is represented by a catalytically coated area of the particulate filter.

Re claim 19, the modified engine of Takahashi discloses the invention as cited above, however, fails to disclose that the system further includes a temperature sensor located between the oxidizing converter unit and the particulate filter.

It is well known to those with ordinary skill in the art that the system in Kupe et al. includes a temperature sensor located between the oxidizing converter unit and the particulate filter and connected to a controller which in the regeneration mode controls the delivery rate of a fuel pump that feeds the fuel reformer depending on an exhaust gas temperature measured upstream of the particulate filter. Therefore, such disclosure by Kupe et al. is notoriously well known in the art so as to be proper for official notice.

8. Claims 5 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi as applied to claim 1 above, in view of van Nieuwstadt et al. (U.S. Patent 6,834,498).

Re claim 5, the engine of Takahashi discloses the invention as cited above, however, fails to disclose that the system further includes a jacket tube, and wherein the fuel evaporator unit

comprises an upright mounted glow plug which is encompassed by the jacket tube to define an annular gap, and the fuel line and the fuel vapor feeding channel discharge into the annular gap.

As depicted in Figure 3A, van Nieuwstadt et al. teach that it is conventional in the art to utilize an aftertreatment system comprising a heated evaporator unit (21) having a jacket tube, wherein the evaporator unit comprises an upright mounted glow plug (22) which is encompassed by the jacket tube to define an annular gap, and the fuel line and the fuel vapor feeding channel discharge into the annular gap. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the evaporator unit taught by van Nieuwstadt et al. in the engine of Takahashi, since the use thereof would have been routinely utilized by those with ordinary skill in the art.

Re claim 8, in the modified engine of Takahashi, an end of the fuel vapor feeding channel oriented toward the fuel evaporator unit extends into the jacket tube.

Re claim 9, the modified engine of Takahashi further includes an insulator and wherein the jacket tube is encompassed by the insulator.

Re claim 10, as shown in van Nieuwstadt et al., the fuel evaporator unit in the modified engine of Takahashi further comprises a preheating stage (23) connected upstream of the fuel evaporator to evaporate the fuel.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of van Nieuwstadt et al. as applied to claim 5 above, and further in view of legal precedent.

The modified engine of Takahashi discloses an invention as cited above, however, fails to disclose that an inside width of the annular gap is between 0.6 mm and 2.0 mm.

Takahashi discloses the claimed invention except for specifying an optimum value of inside width of the annular gap between 0.6 mm and 2.0 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum value of inside width of the annular gap, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi as applied to claim 1 above, in view of legal precedent.

The engine of Takahashi discloses an invention as cited above, however, fails to disclose that a ratio of a cross-section of the fuel vapor feeding channel to a cross-section of the exhaust gas carrying component is between 0.006 and 0.015 near an outlet to the fuel vapor feeding channel.

Takahashi discloses the claimed invention except for specifying an optimum value of a ratio of a cross-section of the fuel vapor feeding channel to a cross-section of the exhaust gas carrying component between 0.006 and 0.015 near an outlet to the fuel vapor feeding channel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum value of the ratio of a cross-section of the fuel vapor feeding channel to a cross-section of the exhaust gas carrying component, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).



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***Allowable Subject Matter***

11. Claims 7, 11, 12, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Prior Art***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of four patents: Wakamoto (U.S. Patent 5,894,728), Pugachev (U.S. Patent 6,314,919), Marko et al. (U.S. Patent 6,387,336), and Hernier (U.S. Patent 6,837,041) further disclose a state of the art.

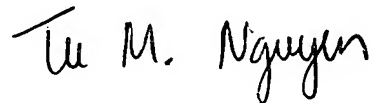
***Communication***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TMN

Tu M. Nguyen

February 7, 2005

Primary Examiner

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